Topic

Past, present, and future issues in disaster nursing

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1. History and background of disaster rescue, disaster medicine, and disaster nursing in Japan

Japan is an island country that experiences many earthquakes and other natural disasters. Disaster in this context refers to incidents that occur in places where people live and that significantly threaten lives and health. Thus, if large-scale crustal movements or atmospheric fluctuations occur in places where there are no humans, they are not referred to as disasters.

In areas in which disasters occur, human lives, health, and livelihoods fall into a critical state, property that has been built up over years is lost, and people face the crisis of community breakdowns. However, Japanese people have a history of supporting local and national development while overcoming disasters, because people tend to help each other through, as they have become accustomed to experiencing many such crises.

In the Meiji Era, rescue activities were conducted during disasters such as the eruption of Mt. Bandai (1888) and the Meiji Sanriku tsunami (1896) by rescue organizations including medical professionals from inside and outside the disaster areas and the Japanese Red Cross Society. Later, the Disaster Relief Act (1947) and Disaster Countermeasures Basic Act (1961) were enacted, and disaster prevention measures began to be conducted by public organizations including national and local government bodies. However, full-fledged, comprehensive disaster measures came after the experience of the Great Hanshin-Awaji Earthquake (1995). The experience and lessons of the Great Hanshin-Awaji Earthquake may be considered the basis for comprehensive measures, including the establishment of disaster base hospitals, cultivation and training of disaster medical assistance teams (DMAT) that rescue sick and injured disaster victims at disaster sites during the hyperacute phase, training of other medical teams sent to disaster areas, and the cooperation of specialists and volunteers.

In recent years, the frequency and scale of natural disasters have increased, partly from the effects of environmental and climate changes at the global level; the damage from these natural disasters is also increasing. We are moving from a situation in which disasters come when they are forgotten to disasters come to forgotten places before the last one disaster is forgotten. In these circumstances, there are increasing expectations for medical and nursing activities for disaster victims and people who become sick or injured in disasters. At the same time, there is increasing the specialist interest in disaster preparedness with local residents.

2. Types of disasters and disaster occurrence in Japan

In Japan, disasters are broadly classified by their causes into natural disasters, human-caused

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disasters including major accidents, and special disasters caused by radiation or chemical substances. Table 1 summarizes disasters that have occurred in Japan since 1946. (Table.1)

Among natural disasters are earthquakes including the Great Hanshin-Awaji Earthquake, the Noto Hanto Earthquake, the Niigataken Chuetsu-oki Eeathquake, the Iwate-Miyagi Nairiku Earthquake, and the 2011 off the Pacific coast of Tohoku Earthquakethe (Great East Japan Earthquake of March 11, 2011). There is also much wind and flood damage from typhoons, tornadoes, and torrential rains. Severe rain, typhoons, and flood disasters include the Tokai heavy rains, the Niigata/Fukushima heavy rains, Fukui heavy rains and recently typhoons No. 12 and No. 15 that struck Wakayama and Nara prefectures. Volcanic eruptions include the eruptions of Mt. Unzen-Fugen, Mt. Usuzan, Mt. Oyama on Miyake Island, and recently Mt. Shinmoedake. Natural disasters occur over relatively wide areas, and in many cases, the effects are felt for long periods.

Human-caused disasters include major accidents in transportation systems, such as the Japan Airlines passenger plane crash and the JR Fukuchiyama Line derailment accident. Compared with natural disasters, human-caused disasters often occur in localized areas.

Special disasters include the Tokaimura criticality accident in Ibaraki Prefecture and the radiation damage following the explosion at Tokyo Electric Power Company's Fukushima No. 1 nuclear power plant. The subway sarin gas attack, an act of indiscriminate terrorism, may also be considered a human-caused special disaster.

Natural disasters occurring in Niigata Prefecture in recent years include the Niigata/ Fukui torrential rains, Chuetsu earthquake, and Chuetsu offshore earthquake, and an earthquake damage centered in the Sakae-mura on March 12, 2011. Disasters occurring in the Kaetsu Region of Niigata Prefecture include the Niigata earthquake, Uetsu flood, and major power outages from heavy snowfall (2005). Thus, many disasters have occurred in Niigata Prefecture.

3. Development of disaster medicine and disaster nursing, and the birth of disaster nursing science

In addition to the provision of temporary shelter and food to sick and injured disaster victims, the Disaster Relief Act includes medical care during rescue activities. Long-term, this medical care is provided by medical aid teams consisting of doctors and nurses that conduct self-contained activities. The Japanese Red Cross Society in particular has established an organizational system of rescue teams prepared for emergencies. Therefore, nursing staff at Japanese Red Cross hospitals are sometimes dispatched in rescue teams from their hospitals during disasters. These disaster medicine support activities continue today with the dispatch of Japanese Red Cross rescue teams at times of disasters in Japan and abroad.

In rescue operations during the Great Hanshin-Awaji Earthquake, however, there were clear limits to the rescue efforts of the teams at disaster sites where injured or sick disaster victims were buried under collapsed houses. This lesson gave rise to DMAT, which consist of medical teams with special training who are sent to disaster sites. Currently, DMAT work in independent teams and are sent to places where disasters have occurred and affected areas both in Japan and abroad. Their experience of disasters is also linked to subsequent medical support activities, as there are characteristic conditions during disasters. For example, in the Great Hanshin-Awaji Earthquake, crush syndrome was a focus of attention, whereas in the Chuetsu Earthquake, the focus was on deep vein thrombosis. In disasters that have occurred thereafter, preventive medical assistance has been provided with reference to these conditions.

In addition, from the experiences of nursing

Table 1. Major disasters in Japan (since 1946)

Date of occurrence	Name of disaster	Disasters that occurred in Niigata Prefecture	Type of disaster
1946/12/21	Nankai earthquake		Earthquake
1960/5/23	Chile earthquake and tsunami		Tsunami
1964/6/16		Niigata Earthquake	Earthquake
1968/5/16	Tokachi offshore earthquake		Earthquake
1969/8/28		Uetsu Flood	Flood
1983/5/26	Central Japan Sea earthquake		Earthquake, tsunami
1985/8/12	Japan Airlines crash		Human error/transportation
1991/5/10	Mt. Unzen-Fugen eruption		Pyroclastic flow, immature debris flow
1993/7/12	Southwest Hokkaido offshore earthquake		Earthquake, tsunami
1995/1/17	The Southern Hyougoken Earthquake in 1995 (Great Hanshin-Awaji Earthquake)		Earthquake
1995/3/20	Tokyo subway station multiple homicide using poison gas (subway sarin gas attack)		Human action/terrorism
1999/9/24	Typhoon No. 18		Flood
1999/9/30	Tokai-mura criticality accident		Radiation
2000/3/31	The eruption of Usuzan volcano in 2000		Volcanic eruption
2000/7/6	Miyake Island eruption		Volcanic eruption
2000/9/11	Tokai heavy rains		Flood
2000/10/6	The East Tottoriken Earthquake in 2000		Earthquake
2001/3/24	The Aki Earthquake in 2001		Earthquake
2003/7/26	The Northern Miyagiken Earthquake in 2003		Earthquake
2003/9/26	The Tokachi-oki Earthquake in 2003		Earthquake, tsunami
2004/7/12~13	Niigata, Fukushima heavy rains	Niigata heavy rains	Flood
2004/7/17~18	Fukui heavy rains		Flood
2004/10/23		The Mid Niigata prefecture Eeathquake in 2004	Earthquake
2004/12~2005/2	The Heavy snowfall in 2005	Niigata heavy snowfall	Heavy snowfall
2005/4/25	JR West Fukuchiyama Line derailment accident		Human error/transportation
2005/12/25	JR East Uetsu Honsen Limited Express Inaho train accident		Wind gusts, transportation
2006/7/1	Heavy rains in Nagano, Miyazaki, and Kagoshima Prefectures		Flood
2007/3/25	The Noto Hanto Earthquake in 2007		Earthquake
2007/7/16		The Niigataken Chuetsu-oki Eeathquake in 2007	Earthquake
2008/6/14	The Iwate-Miyagi Nairiku Earthquake in 2008		Earthquake
2011/1/26	Mt. Shinmoedake eruption		Volcanic eruption
2011/3/11	The 2011 off the Pacific coast of Tohoku Earthquake(Great East Japan Earthquake)		Earthquake, tsunami
2011/3/12	Northern Naganoken(Sakaemura)earthquake	Tokamachi-city,Tsunan-machi earthquake	Earthquake
2011/3/12	Fukushima No. 1 nuclear power plant accident		Nuclear power plant explosion, radiation
2011/7/27~30	Niigata, Fukushima heavy rains	Niigata heavy rains	Flood
2011/9/1	Typhoons No. 12, No. 15		Storm and flood, Soil fall

volunteers at disaster sites during the Great Hanshin-Awaji Earthquake, a need was recognized for better organization of nurse support activities during disasters. The Japanese Nursing Association, a professional organization of nurses, has started registration and training of disaster support nurses (at that time called disaster nurse volunteers). The Japanese Nursing Association sends disaster support nurses in cooperation with prefectural nursing associations in response to requests from prefectural nursing associations in the disaster area. At the time of the Chuetsu Earthquake (2004), the Niigata Nursing Association had nurses sent from all parts of the nation to perform support activities for the maintenance and recovery of the daily lives and health of people living in the disaster area. In addition, since 2005, the Niigata Nursing Association has been training disaster support nurses every year to be dispatched to disaster sites within Niigata Prefecture, disaster sites in neighboring prefectures, and disaster sites nationwide. The Association also conducts training with the aim of raising the quality of activities of disaster support nurses and increasing research on support for nurses in disaster areas.

The Japan Society of Disaster Nursing was established (1998) in the Kobe area following the Great Hanshin-Awaji Earthquake with the aim of building and systematizing disaster nursing as an academic discipline [1], while also conducting educational and research activities in disaster nursing. The Society accumulates data on disaster nursing [2-12], while also publishing wide-ranging research results from studies on support for disaster victims [13-15] studies on disaster nursing education [16-19], and studies on people who support victims [20-22].

In addition, few nursing schools included disaster nursing in their basic nursing education curricula before the Great Hanshin-Awaji Earthquake. One exception was the Japanese Red Cross Society, and in their case, only education regarding rescue activities during disasters was included in basic nursing education. In 2009, possession of basic knowledge of nursing support immediately after disasters was considered when revising nursing education courses, and “disaster nursing” was added to educational programs. Thus, educational content related to support in times of disaster has come to occupy an important place in nursing education. Niigata University of Health and Welfare Department of Nursing (Department) has offered “Disaster Nursing Practical Training” (1 unit, 30 hours) as an elective for third-year students since the opening of the department in 2006. The Department provided an educational course in which students could study disaster nursing since before it became a mandatory item in the nursing education course in the rules for public health nurses, midwives, and nurse training schools. Since 2009, the Department’s mandatory “Disaster Nursing Practical Training” has been offered as a course to meet the needs of actual disaster sites. This course was developed by department faculty with the cooperation of outside nurses and related companies that are knowledgeable in the implementation, theory, education, and coordination of disaster nursing.

4. Disaster nursing support activities in our university department

During the Chuetsu Offshore Earthquake (2007), faculty from our Department conducted support activities in a Kashiwazaki City shelter for people with special needs and in a Kariwamura shelter. In Kashiwazaki City, they were in continuous charge of one shelter for people with special needs, and while providing care workers in a 24-hour system, also conducted daily living support activities for people who need support during disasters (vulnerable people). In addition, they assisted in a health survey of all households in Kashiwazaki City. Following this experience, they established the Niigata

Prefecture University Disaster Support Association with faculty members from the Niigata University Graduate School of Health Sciences, Niigata College of Nursing, and Niigata Seiryo University. The system of cooperation was strengthened with universities in Niigata Prefecture as affiliated schools. The Association also conducts regular activities with the aim of developing a network of cooperating municipalities. During the Great East Japan Earthquake, member schools of the Niigata Prefecture University Disaster Support Association conducted support activities in shelters set up in Niigata City and Seiro Town for residents of Minamisoma City in Fukushima Prefecture, based on the network that had been built up with municipalities. In the future, after organizing and analyzing the experiences of the various universities involved in the Great East Japan Earthquake relief activities, member schools of the Association will be obligated to develop their activities further. At the same time, to ensure the safety of support activities conducted by faculty members of our Department, in addition to preparing materials, we are facing the task of upgrading the disaster support system in our Department, including having faculty members themselves acquire knowledge and skills related to disaster nursing, guaranteeing people's status during activities, and developing methods to provide backup support for faculty members active in disaster areas.

5. Disaster nursing and future issues for support activities by specialists

The goal of disaster nursing is to help protect and maintain the lives and daily living of disaster victims. To achieve this goal, it is important to integrate existing professional nursing knowledge and tie this to practices in the special, extraordinary circumstances of disasters. At the same time, it is necessary to combine the knowledge, skills, and lessons obtained through actual disaster nursing activities with the professional knowledge and skills in various fields of nursing, organize them according to the characteristics of victims and disaster areas, the living circumstances of victims, and the timing in the disaster cycle, and create a database that can be used by anyone at any time.

In particular, it is necessary to rapidly and accurately obtain the information necessary at the time of a disaster, elucidate the condition of people who need support in protecting themselves during disasters (i.e. vulnerable people), and investigate measures. In other words, there is an urgent need to accumulate data for the purpose of investigating support for elderly people, foreign nationals, infants, pregnant women and mothers of children, and people with significant medical needs, such as patients with intractable neurological disorders and such chronic diseases as Parkinson's disease and amyotrophic lateral sclerosis (ALS), and to investigate support measures.

Disaster nursing is not limited to short-term practices within medical facilities, but assumes medium-term practices in areas where there are victims and people who become sick or injured following disasters. Therefore, it is important to expand the site of nursing practices, which ordinarily tends to be limited to medical facilities, to the community through visiting medicine and visiting nursing, and to conduct training and drills that assume medical and nursing activities in places outside of regular medical facilities.

Disaster medicine and support activities in disasters are not done solely by medical personnel working in hospitals. In disaster areas, support activities for people who become sick or injured in disasters are carried out not only by medical professionals and volunteers, but also by people from diverse professions including police, firefighters, government agencies, and welfare organizations. After understanding the respective roles and limitations of people providing support,

it is necessary to have each of these roles work synergistically and to provide support that is consistent with the support needs of disaster victims. To provide support that matches the needs of victims, it is critical to train personnel who can serve as coordinators to link people in various professions. Public health nurses in local government bodies, who are nurse workers, are already fulfilling this role. Currently, however, it is sometimes difficult to ensure an adequate source of public health nurses because of the merging of municipalities. In the future, to protect the health and lives of public health nurses themselves, and with the aim of using the human resources of dispatched support workers smoothly, people will be needed to fulfill coordination roles in the extraordinary circumstances of disasters. It is desirable that, based on the leadership of public health nurses in local government bodies, personnel are educated who can coordinate general support workers sent to disaster areas in emergencies and perform the role of assigning the right people to provide support to the right places, with consideration of the characteristics of victims and the disaster area and the type, timing, and place of the disaster. Development of a system for such personnel is also needed.

Currently, people of various professions enter the disaster area through various routes to provide support in the acute to the subacute phases in the disaster cycle. In these circumstances, there is a real possibility that support provided with limited resources will not be conducted effectively, for example, that there will be redundancy in support for disaster victims and people who become sick or injured in disasters or that people will need support that does not arrive immediately. In comparison, during the chronic to recovery phases it is easier to obtain information on where and what kind of support is needed, and both the quantity and quality of resources can be ensured. Thus, it is comparatively easy to provide support based on victims' needs. In the confusion of the disaster area during the acute phase, however, even when the support of professionals is necessary, it is difficult to provide continuous support to the places and people that need it. Based on such circumstances, the formation and activity of multidisciplinary teams of public health, medicine, and welfare professionals has been proposed so that effective, professional support will reach the places and people that need it as soon as possible. It is important in the acute phase for the different professions to make assessments of disaster areas and victims simultaneously, ascertain support needs, and link this to immediate implementation of activities. The Niigata University of Health and Welfare, which emphasizes coordinated education, is an assemblage of public health, medicine, and welfare specialists, and so may be able to become a model for the formation of such multidisciplinary teams ahead of all others nationwide. The University's activities in contributing to the community are promising.

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